

Memorandum of Understanding

Between

The Regents of the University of California

and

The University Corporation for Atmospheric Research

This Memorandum of Understanding (MOU) is by and between the Regents of the University of California, manager and operator of Los Alamos National Laboratory (LANL), Los Alamos New Mexico, under contract to the National Nuclear Security Administration (NNSA) of the US Department of Energy (DOE) and the University Corporation for Atmospheric Research, acting on behalf of the National Center for Atmospheric Research (NCAR), P.O. Box 3000, Boulder Colorado, hereinafter collectively referred to as the “Party” or “Parties”.

I. Introduction

LANL, managed and operated for the National Nuclear Security Administration by the Regents of the University of California, and NCAR, primarily supported by the US National Science Foundation, are two of the leading national laboratories in the United States. Both have significant computational resources, carry out a wide range of scientific research activities, and develop, use and maintain a wide variety of scientific observing and modeling systems. NCAR and LANL share a common vision to develop measurement and modeling tools which support improved understanding of the interactions of the atmosphere and other elements of the Earth system. Predictions of future climates, which in turn can influence scenarios of regional and urban energy independence, water security, carbon management, climate mitigation, and national security, are of particular interest to both institutions.

LANL and NCAR have a long standing history of successful scientific cooperation, particularly in the development of the NCAR-hosted Community Climate System Model (CCSM). The ocean component of CCSM2 uses the Parallel Ocean Program (POP) developed, upgraded, and maintained by the Climate, Ocean and Sea Ice Modeling (COSIM) program at LANL. The sea-ice component of CCSM2 uses the elastic-viscous-plastic ice rheology developed at LANL and the sea-ice model framework in CCSM2 is based on the LANL sea-ice model (CICE).

II. Purpose and Objectives

The purpose of this MOU is to define a framework for scientific cooperation between NCAR and LANL. NCAR and LANL plan to maintain and enhance their cooperative relationship through regular exchange of information about ongoing and newly developing plans and activities.

- NCAR and LANL intend to continue working together on existing cooperative projects.

- NCAR and LANL may, in cases of mutual agreement, agree to develop new joint research and development projects. This may include the creation and submission of joint proposals to DOE, NSF and other funding agencies.

III. Research Areas of Mutual Interest

1. The physics, hydrology, biogeochemistry, and mathematics of Earth system and Sun-Earth system research and modeling, including:

- Ocean modeling
- Sea ice modeling
- Hydrology modeling
- Space Weather modeling
- Tropical cyclones and air-sea interactions
- Land use, biosphere-atmosphere coupling, carbon and water balance studies
- Aerosol physics, chemistry and transport dynamics

2. Global, regional and urban applications of climate and weather predictions, including investigation of the potential impacts on:

- Regional and urban hydrology and air quality
- Regional and urban energy resources, taking also into account emerging energy technologies and their economic viability
- Fire weather, forest fire propagation and associated air quality impacts, taking also into account droughts and ecosystem conditions
- Integrated assessment for regional and urban national security, taking into account energy, water, and population pressures, and feedbacks, as well as external threats associated with homeland security
- Nonlinear dynamics associated with specific processes affecting regional climate, e.g., predicting extreme storm events and quantifying their contribution to climatology

3. Development and application of cyberinfrastructure capabilities, including:

- Computer science, computational science, and software engineering, including emerging areas such as grid computing and distributed simulation
- Applied mathematics and numerical methods
- Definition, development, and application of new software frameworks and environments
- Geographic Information Systems
- Scientific Visualization
- Data storage and access technologies

4. Design, development, and use of in situ and remote sensing observational systems, including:

- Surface-based systems

- Aircraft and balloon-based systems
- Space-borne systems

5. Education, Outreach, and Professional Development, including:

- Coordination and possible joint funding of graduate students and postdoctoral programs
- Exchange of students and professional staff for short and long-term visits

IV. Mechanisms for Cooperation

1. Joint Steering Committee: NCAR and LANL intend to create a Joint Steering Committee to oversee existing cooperative activities and facilitate the exchange of information about research projects and plans that could form the basis of new cooperative activities. The Joint Steering Committee will be co-chaired by the NCAR Deputy Director and the LANL AD for Strategic Research, and they will meet once per year. The co-chairs shall serve as the points of contact for this MOU.

- The steering committee will assess programmatic opportunities, make recommendations for joint activities, and make recommendations on the topics and scope of jointly funded graduate students and postdocs.
- LANL's membership will include representatives from the Energy and Environment Council and/or cognizant divisions (climate, hydrology, energy infrastructure, GIS), Institute of Geophysics and Planetary Physics (climate and space physics activities), Center for Space Science and Exploration (space weather activities), and COSIM (CCS-driven). NCAR's membership will include representatives from NCAR's Societal-Environmental Research Laboratory, Earth Observing Laboratory, Earth and Sun Systems Laboratory, Computational and Information Systems Laboratory, and Research Applications Laboratory.
- The Joint Steering Committee may choose to establish working groups to explore the development and/or implementation of new joint activities in the areas described in Article III or other areas as mutually agreed. This committee will prepare and deliver briefings to DOE and NSF, as needed.

2. CCSM Scientific Steering Committee and Working Groups: NCAR and LANL are both important participants in the ongoing NCAR-hosted CCSM project. NCAR and LANL agree to continue this successful collaboration through participation in the CCSM Scientific Steering Committee and working groups responsible for ongoing development of CCSM and the application of CCSM to grand challenge climate research problems.

- Specifically, NCAR and LANL will continue their partnership in the development, optimization, and validation of POP and the sea-ice model for future generations of CCSM.

- NCAR and LANL will investigate possibilities for expanded climate change model development and research as mutually agreed, and implement such cooperation through the appropriate CCSM working groups.

V. Funding and Costs

No funds are committed and no legal obligations are created by this MOU. Any binding commitment for any of the funds or activities discussed in this MOU shall be made under a separate funding agreement. Each Party shall be responsible its own costs unless other arrangements are made through such future agreement(s) as may be approved by each party. Such agreements may be, without limitation, procurements of services or materials, Work for Others, etc.

VI. No Third Party Rights

Nothing in this MOU, express or implied, is intended to confer any rights, remedies, claims, or interests upon a person not a party hereto.

VII. Agency

Neither of the Parties hereto, nor any of their respective employees, shall be construed to be the agent, employer or representative of the other, nor will either Party have an expressed or implied right of authority to assume or create any obligation or responsibility on behalf of or in the name of the other Party. In no event shall this MOU be construed to establish a partnership, joint venture, or other similar relationship between the Parties, and nothing contained herein shall authorize either Party to act as an agent for the other.

VIII. Intellectual Property and Proprietary Information

The Parties plan to make the results of their collaborative work fully and openly available in either open source environments and/or publications in accordance with existing copyrights and their respective data policies and practices. However, in the event that any activities under this MOU require one Party to use the other Party's intellectual property or proprietary information, the Parties shall enter into good faith negotiations to produce a mutually agreeable agreement about the obligations and terms associated with the exchange.

IX. Claims

Each Party shall be responsible for any claims and demands arising under the MOU in proportion to its fault in the events giving rise to such claims and demands, as determined by the law and judicial precedent and as limited by any federal or state law applicable to one or the other of the Members.

X. Technical Points of Contact

LANL

Terry Wallace
Associate Director, Strategic Research
Los Alamos National Laboratory
Los Alamos, NM 87545

NCAR

Larry Winter
Deputy Director, NCAR
University Corporation of Atmospheric Research
1850 Table Mesa Drive
Boulder, CO 80305

X. Dispute Resolution

Conflicts or issues may arise which cannot be resolved between LANL personnel and NCAR personnel. Such conflicts or issues should be raised to the necessary level of management to obtain resolution. It is expected that normal communication channels will be used for routine issues; however, should satisfactory resolution not be obtained through normal interactions, the designated Points of Contact will take the issues up their respective organizational levels until the issues are resolved. If resolution still cannot be reached, the issues will be referred to the NCAR Laboratory Director and the LANL Laboratory Director for resolution.

XI. Export Control

Export Control: (a) The Parties agree to adhere to all applicable U.S. Export Laws and Regulations, (b) Each Party acknowledges that it is responsible for its own compliance with all U.S. export control laws and regulations, and (c) will not knowingly export directly or indirectly, through their affiliates, licensees, or subsidiaries, any export controlled hardware, software, or technical data in the performance of this MOU without a required license which will be obtained by the responsible party from the appropriate U. S. Authority

XII. Term and Termination

This MOU shall become effective upon signature by both Parties, shall continue in effect for a period of three (3) years, and may thereafter be extended by mutual, written agreement of the Parties. Either Party may terminate this MOU by giving written notice to the other Party; the MOU will terminate thirty (30) days thereafter.

XIII. Assignment

It is understood and agreed that this MOU is entered into by the Parties and that administration of this MOU may be transferred from one or both of the Parties to its respective Government contracting agency or its designee. The Parties agree to provide written notification 30-days in advance of an administrative transfer.

XIV. Entire Agreement

This MOU constitutes the full and final understanding of the Parties on all subjects contained within it. All prior negotiations, understandings, and agreements are merged into this MOU. No subsequent understanding or agreement may modify this MOU unless it is in writing and signed by the Members or their authorized agents.

XV. Authorized Signatures

_____ Date _____
Timothy Killeen
Director, NCAR

_____ Date _____
Gina Taberski
Sponsored Agreements, UCAR

_____ Date _____
G. Pete Nanos
Director, LANL